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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/855,022	05/15/2001	Kaj Henricson	30-475	8000

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EXAMINER

HUG, ERIC J

ART UNIT PAPER NUMBER

1731

8

DATE MAILED: 09/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/855,022

Applicant(s)

HENRICSON ET AL.

Examiner

Eric Hug

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 27-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 27, 31 and 32 is/are rejected.
- 7) ☒ Claim(s) 28-30, 33 and 34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 May 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities:

Headings are not provided for the respective sections of the specification.

Appropriate correction is required.

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings

are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-16, 31, and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites in lines 4-5 "...washing the cooked pulp in several stages and delignificating/washing the pulp in an oxygen stage following the wash of the pulp" The claim then recites in line 6 "the filtrate of some washing stage preceding *the washing of the pulp*". It is unclear whether *the washing of the pulp* refers to washing the cooked pulp in several stages (before the oxygen stage), or to delignificating/washing the pulp in the oxygen stage, or to the combination of both. There is also insufficient antecedent basis for *the washing of the pulp* in the claim. For examination purposes, this limitation will be considered to be the step of delignificating/washing in an oxygen stage.

Claim 1 also recites the limitation "the wash prior to said oxygen stage" in line 8. There is insufficient antecedent basis for this limitation in the claim. For examination purposes, this limitation will be considered to be the last of the several washing stages prior to the oxygen stage.

Claims 31 and 32 recites the limitation "the mixer". There is insufficient antecedent basis for this limitation in the claim. Changing the dependency to one on claim 29 (where "mixer" first appears) would overcome this rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Maples et al (US 5,853,535). Maples discloses a process for manufacturing bleached pulp comprising in order a brown stock washing stage for digested wood pulp, then an oxygen delignification stage, a washing stage after delignification, and then several bleaching stages. Filtrate from one of the bleaching stages is recycled and run counter-currently back through the brown stock washing stage, thus reducing the amount of organic material at downstream pulp processing steps. The brown stock washing stage consists of two to four brown stock washers in series, with wash water traveling in a direction counter-current to the pulp flow. Treatment of brown stock wash water with the bleaching stage filtrate is done on at least one of the brown stock washers. Thus, the filtrate from one of the brown stock washing stages, located upstream of the oxygen stage, is treated with an oxidizing agent before being reused in a previous brown stock washing stage. Therefore, the method of Maples reads on claim 1. With respect to the other claims:

Claim 2: The bleach effluent used to treat the brown stock wash washer is obtained from water which has passed through the washing stage after the oxygen stage.

Claim 4: Only brown stock wash water effluent being reused in another brown stock washing stage is treated with the bleach effluent (as opposed to the effluent from the first brown stock washer, which goes to chemical recovery).

Claim 5: Any one of several bleaching chemicals, including oxygen or hydrogen peroxide, can be present in the bleaching effluent which treats the brown stock wash water.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 3, 6-9, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maples et al (US 5,853,535) in view of Smook (Handbook for Pulp and Paper Technologists, pp. 134, 175-177) and Marcucci et al (Bleaching Technology, pp. 80-82). Maples discloses the process of treating brown stock wash water with bleaching effluent described above. Maples discloses that the brown stock washing stage consists of a series of washing devices which produce a filtrate than can be treated. However, Maples does not explicitly describe the washing devices.

Smook, in Figure 10-1, shows a conventional kraft pulping operation. The pulping operation comprises a digester for wood chips and a series of brown stock drum filters utilizing

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counter-current flowing washing water. At the time of the invention, it would have been obvious to one skilled in the art to use a series of conventional drum filters for the brown stock washers of Maples, because drum filters allows one to separate the cleaned pulp from the washing liquid during the washing process and also allows one to utilize the counter-current washing scheme effectively.

Maples also does not explicitly describe the oxygen delignification process, although he claims that it is run under typical conditions of temperature, pressure, and alkalinity (supplied by white liquor to the pulp beforehand). Smook, under the section on oxygen bleaching on pages 175-177, describes typical operating conditions for oxygen delignification that can remove up to 30% of the lignin. Snook discloses a pressure of 90-130 psi (6-9 bar) and a temperature of 90-130°C, which reads on the claimed ranges. The article by Marcucci also discloses some typical operating conditions for oxygen delignification. In Table 1, Marcucci discloses that the amount of oxygen required is between 30-35 lbs per ton of pulp, which also reads on the claimed range. It also would be reasonable to expect that the pH is greater than 7.5 since the pulp is treated with highly alkaline white liquor prior to delignification. It also would be reasonable to expect that the time allowed for oxygen delignification is between 0.5-120 minutes, given the size of the processing vessels and the amount of pulp being treated. Thus, at the time of the invention, it would have been obvious to one skilled in the art to use conventional process conditions in the oxygen delignifying stage of Maples to produce a pulp with a substantial amount of lignin removed prior to the bleaching stages.

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4. Claims 1-3, 5-9, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smook (Handbook for Pulp and Paper Technologists) in view of Brahmbhatt (US 5,783,037). A conventional kraft pulping operation is shown in Figure 10-1 of Smook. The operation comprises a digester for wood chips and a series of brown stock washing devices utilizing counter-current flowing washing water. From the brown stock washing devices, the pulp goes to the bleaching operation. Figure 11-18 shows a conventional oxygen delignifying system which immediately follows the brown stock washing operation. Filtrate water used in the delignifying system is reused as a source of wash water in the brown stock washing devices (indicated by arrow pointing to "To brownstock washer showers"). Another washing stage occurs at the end of the delignifying system. Therefore, the prior art according to Smook teaches cellulose digestion, followed by brown stock washing in several stages, followed by delignifying in an oxygen stage, followed by washing again, and also teaches recirculating wash fluid from the oxygen stage back to the brown stock washers. Smook does not disclose treating the brown stock wash water with a chemical at any point in the counter-current washing process.

Brahmbhatt discloses injecting oxygen into processing units and processing streams within the pulp mill process to react with chemical species such as lignin. One additional point for chemical treatment is the effluent line from any one of the brown stock washing stages. By injecting the effluent with oxygen, the chemicals in the effluent stream are treated before being recycled in the process or discharged to the environment. Thus, at the time of the invention, it would have been obvious to one skilled in the art to add oxygen to brown stock wash water after it has passed through a washing stage as taught by Brahmbhatt in order to reduce the amount of residual chemicals and lignin before carrying the wash water through to the rest of the pulping

process. By adding oxygen to a brown stock washer effluent of a conventional pulp process prior to recycling, one arrives at the claimed invention.

The addition of oxygen to the brown stock wash water reads on method claim 1 as described above and also reads on apparatus claim 27, as the devices for treating the brown stock with oxygen are provided for by Brahmbhatt and all other claimed devices of the pulping process are provided for by Smook. With respect to the other claims:

Claim 2: Smook shows in Figure 11-18 that filtrate obtained from the washer at the end of the oxygen stage is used in the brown stock washers (which precede the oxygen stage).

Claims 3, 6, 8, 9: The brown stock washers shown in Figure 10-1 are multi-stage drum filters whereby filtrate obtained from one washer is reused as wash water for another (in counter-current fashion).

Claim 5: Oxygen is used as the treating chemical.

Claim 7: Brahmbhatt treats effluent from a brown stock washing stage. According to Figure 10-1 of Smook, which shows a series of drum filter washers, the effluent from any washer but the first washer is returned to another drum filter. Therefore, treated effluent that is recycled will be obtained from one drum filter and returned to the preceding drum filter.

Allowable Subject Matter

Claims 10-13, 16, 31, and 32 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 28-30, 33, and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 10-13 and 16 are allowable, because the prior art does not disclose or suggest a method of treating chemical pulp by adding an oxidizing chemical to a portion of the brown stock washing liquid, whereby filtrate from a washer is led into a chemical mixer and allowed sufficient time to mix with the oxidizing chemical before being led to the preceding washing device as a washing liquid.

Claims 28-34 are allowable, because the prior art does not disclose or suggest an apparatus for treating chemical pulp comprising chemical mixing/oxidizing devices, separation devices, or pressurized vessels located in a washing water filtrate line between any two brown stock washing devices.

The prior art only teaches directly adding or injecting the oxidizing chemical into the effluent flow line.

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Lee (US 4,297,164) treats brown stock wash water with a polymer for improved chemical recovery and removal of lignin.

Fries et al (US 4,810,328) treats brown stock wash water with a surfactant, a dispersant, and a solvent for removing organic material.

Hise (US 4,956,048) discloses using alcohol to treat brown stock prior to bleaching.

Meier et al (US 5,246,543) discloses treating brown stock with peroxomonosulfuric acid (Caro's acid) prior to bleaching.

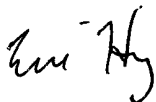
Pelton et al (US 5,310,460) treats brown stock wash water with a water soluble cationic polymer for removing lignin.

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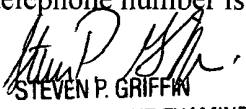
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Hug whose telephone number is 703 308-1980. The examiner can normally be reached on Monday through Friday, 8:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 703 308-1164. The fax phone numbers for the organization where this application or proceeding is assigned are 703 305-7718 for regular communications and 703 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0651.



jeh
August 30, 2002



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